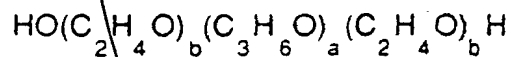


## CLAIMS

1. A polyoxypropylene/polyoxyethylene block copolymer with the following general formula:



wherein the molecular weight represented by the polyoxypropylene portion of the copolymer is between approximately 900 and 15000 daltons and the molecular weight represented by the polyoxyethylene portion of the copolymer constitutes between approximately 5% and 90% of the copolymer and the polydispersity value is less than approximately 1.07.

2. The block copolymer of Claim 1, wherein the polydispersity value is less than approximately 1.05.

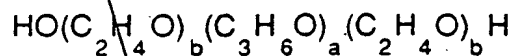
3. The block copolymer of Claim 1, wherein the polydispersity value is less than approximately 1.03.

4. The block copolymer of Claim 1, wherein the copolymer is substantially unsaturated.

5. The block copolymer of Claim 1, wherein the copolymer has a molecular weight range of between approximately 1,200 and 6500 daltons.

6. The block copolymer of Claim 5, wherein polyoxyethylene portion of the copolymer constitutes between approximately 10% and 90% of the copolymer.

5 ~~7.~~ A surface-active copolymer comprising a polyoxypropylene/polyoxyethylene block copolymer with the following general formula:



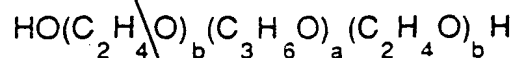
10 wherein the molecular weight of the hydrophobe ( $\text{C}_3\text{H}_6\text{O}$ ) is approximately 1750 daltons and the average total molecular weight of the compound is approximately 8400 daltons and the polydispersity value is less than approximately 1.07.

15 8. The surface-active copolymer of Claim 7, wherein the polydispersity value is less than approximately 1.05.

9. The surface-active copolymer of Claim 7, wherein the polydispersity value is less than approximately 1.03.

20 10. The surface-active copolymer of Claim 7, wherein the copolymer is substantially unsaturated.

11. A surface-active copolymer comprising a polyoxypropylene/polyoxyethylene block copolymer with the following general formula:

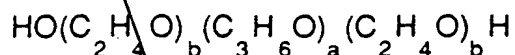


5 wherein the total molecular weight of the copolymer is between approximately 5,000 and 15,000 daltons and the molecular weight represented by the polyoxyethylene portion of the copolymer constitutes between approximately 75% and 85% of the copolymer.

10 12. The surface-active copolymer of Claim 11, wherein the total molecular weight of the copolymer is between approximately 7,000 and 12,000 daltons.

15 13. The surface-active copolymer of Claim 11, wherein the copolymer is substantially unsaturated.

14. A surface-active copolymer comprising a polyoxypropylene/polyoxyethylene block copolymer with the following general formula:



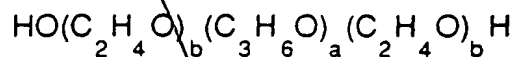
wherein the molecular weight of the hydrophobe ( $\text{C}_3\text{H}_6\text{O}$ ) is approximately 9,700 daltons and the average total molecular weight of the compound is approximately 10,000 daltons and the polydispersity value is less than approximately 1.07.

15. The surface-active copolymer of Claim 14, wherein the polydispersity value is less than approximately 1.05.

16. The surface-active copolymer of Claim 14, wherein the polydispersity value is less than approximately 1.03.

17. The surface-active copolymer of Claim 14, wherein the copolymer is substantially unsaturated.

18. A surface-active copolymer comprising a polyoxypropylene/polyoxyethylene block copolymer with the following general formula:



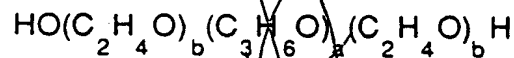
wherein the molecular weight of the hydrophobe ( $\text{C}_3\text{H}_6\text{O}$ ) is approximately 3400 daltons and the average total molecular weight of the compound is approximately 4000 daltons and the polydispersity value is less than approximately 1.07.

19. The surface-active copolymer of Claim 18, wherein the polydispersity value is less than approximately 1.05.

20. The surface-active copolymer of Claim 18, wherein the polydispersity value is less than approximately 1.03.

21. The surface-active copolymer of Claim 18, wherein the copolymer is substantially unsaturated.

22. A method of preparing a non-toxic surface-active copolymer including first condensing propylene oxide with a base compound containing a plurality of reactive hydrogen atoms to produce polyoxypropylene polymer and then condensing ethylene oxide with the polyoxypropylene polymer to produce a polyoxypropylene/polyoxyethylene block copolymer with the following general formula:



the improvement being the purification of the polyoxypropylene polymer before the step of condensing ethylene oxide with the polyoxypropylene polymer so that the polydispersity value of the polyoxypropylene/polyoxyethylene block copolymer is less than approximately 1.07.

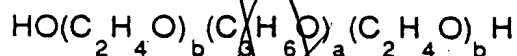
23. The method of Claim 22, wherein the polydispersity value of the polyoxypropylene/polyoxyethylene copolymer is less than approximately 1.05.

24. The method of Claim 22, wherein the polydispersity value of the polyoxypropylene/polyoxyethylene copolymer is less than approximately 1.03.

25. The method of Claim 22, wherein the polyoxypropylene polymer is purified by gel permeation chromatography.

26. The method of Claim 22, wherein the copolymer is substantially unsaturated.

27. A method of preparing a non-toxic surface-active copolymer including first condensing propylene oxide with a base compound containing a plurality of reactive hydrogen atoms to produce polyoxypropylene polymer and then condensing ethylene oxide with the polyoxypropylene polymer to produce a polyoxypropylene/polyoxyethylene block copolymer with the following formula:



wherein the molecular weight of the hydrophobe ( $\text{C}_3\text{H}_6\text{O}$ ) is approximately 1750 daltons and the total molecular weight of the compound is approximately 8400 daltons,

the improvement being the purification of the polyoxypropylene polymer before the step of condensing ethylene oxide with the polyoxypropylene polymer thereby providing a polyoxypropylene/polyoxyethylene block copolymer preparation with a polydispersity value of less than approximately 1.07.

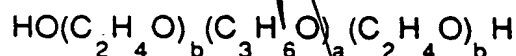
28. The method of Claim 27, wherein the polydispersity value of the polyoxypropylene/polyoxyethylene copolymer is less than approximately 1.05.

29. The method of Claim 27, wherein the polydispersity value of the polyoxypropylene/polyoxyethylene copolymer is less than approximately 1.03.

30. The method of Claim 27, wherein the polyoxypropylene polymer is purified by gel permeation chromatography.

31. The method of Claim 27, wherein the copolymer is substantially unsaturated.

32. A method of preparing a non-toxic surface-active copolymer including first condensing propylene oxide with a base compound containing a plurality of reactive hydrogen atoms to produce polyoxypropylene polymer and then condensing ethylene oxide with the polyoxypropylene polymer to produce a polyoxypropylene/polyoxyethylene block copolymer with the following formula:



wherein the molecular weight of the hydrophobe ( $\text{C}_3\text{H}_6\text{O}$ ) is approximately 1750 daltons and the average total molecular weight of the compound is approximately 8400 daltons,

the improvement being the purification of the polyoxypropylene polymer before the step of condensing ethylene oxide with the polyoxypropylene polymer thereby providing a polyoxypropylene/polyoxyethylene block copolymer preparation wherein the polyoxypropylene portion of the copolymer is between approximately 900 and 15000 daltons and the molecular weight represented by the polyoxyethylene portion of the copolymer constitutes between approximately 5% and 95%.



33. The method of Claim 32, wherein the copolymer has a molecular weight range of between approximately 1,200 and 6500 daltons.

34. The method of Claim 32, wherein polyoxyethylene portion of the copolymer constitutes between approximately 10% and 90% of the copolymer.

35. The method of Claim 32, wherein the copolymer is substantially unsaturated.

add A<sup>2</sup>

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